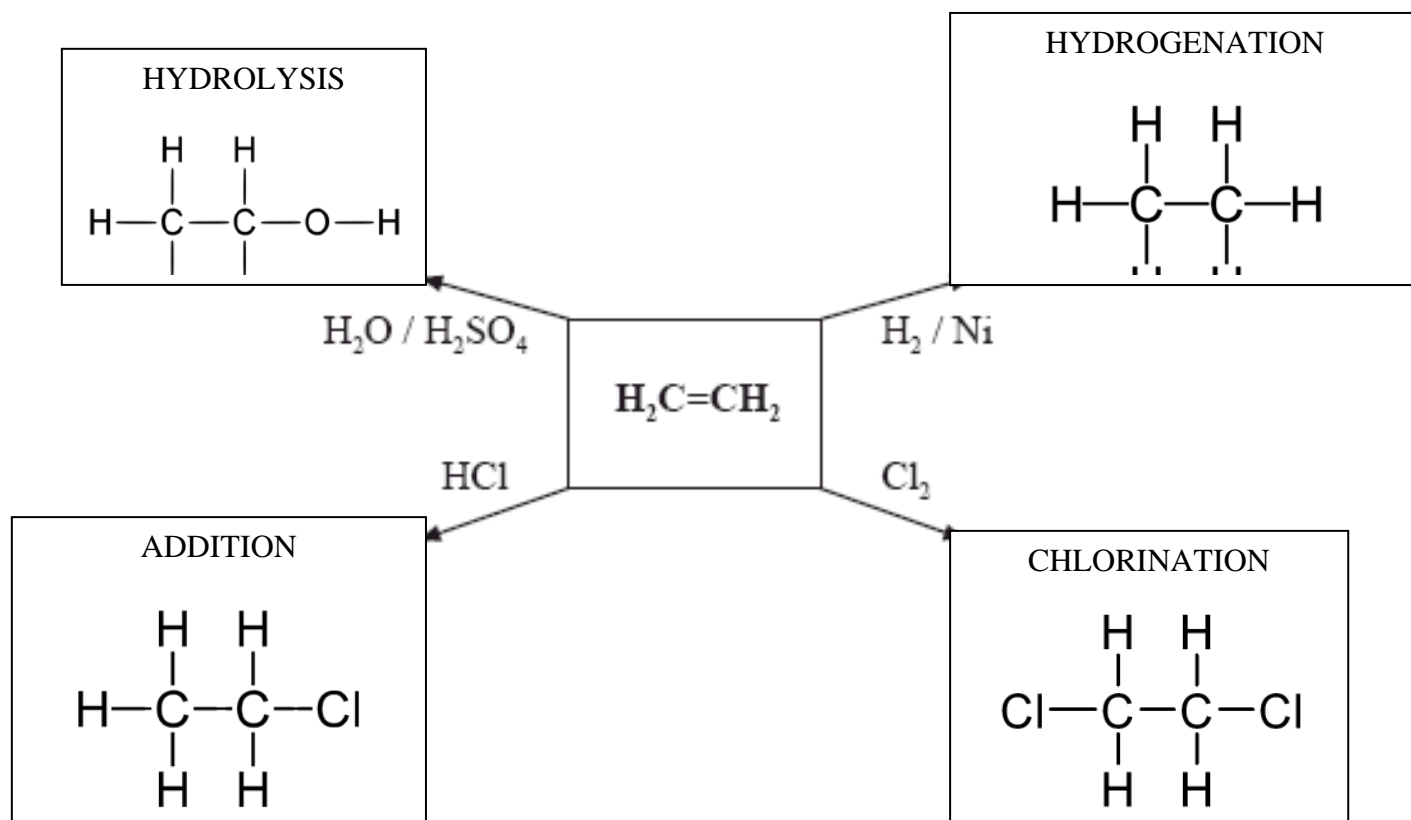


## ANSWERS: Crystal ball questions on Types of Reactions

- 1) i) cis-2-butene and trans-2-butene  
ii) warm the 2-methylpropanol with conc. sulfuric acid

2)



### 3) Acid base reactions

propanoic acid + sodium carbonate  $\rightarrow$  sodium propanoate + carbon dioxide + water  
propanamine + hydrochloric acid  $\rightarrow$  propylaminechloride

### Hydrolysis reaction

propene + water  $\rightarrow$  propanol

This will occur when sulfuric acid is added to propene and the mixture is warmed

### Elimination

propene +  $\text{HCl} \rightarrow$  2-chloropropane (major product) + 1-chloropropane (minor product)

### Bromination

propene + bromine  $\rightarrow$  1,2-dibromopropane

This reaction is immediate, the colour change is orange to colourless

### Hydrogenation

propene + hydrogen  $\rightarrow$  propane

This will occur when propene and hydrogen are passed over a heated catalyst such as nickel

### Substitution

propane + bromine  $\rightarrow$  1-bromopropane

This reaction takes 10 mins and light is required, the colour change is orange to colourless

### Addition

propene + bromine  $\rightarrow$  1,2-dibromopropane

This reaction happens immediately, the colour change is orange  $\rightarrow$  colourless

#### Dehydration

propanol  $\rightarrow$  propene

This will occur when a dehydrating agent such as conc sulfuric acid is added to propanol

#### Oxidation

propene + [O]  $\rightarrow$  propan-1,2diol

The oxidising agent required is acidified potassium permanganate and the colour change is from purple to colourless

OR

propan-1-ol + [O]  $\rightarrow$  propanoic acid

Either acidified potassium permanganate or acidified potassium dichromate can be used as the oxidising agents. The colour change with permanganate is purple to colourless, the colour change with dichromate is orange to green.